

REMARKS

In the Final Office Action, the Examiner pointed out an inadvertent error in the paragraph entitled "Amendments To The Claims" at page 2 of Applicants' Amendment filed August 17, 2005; rejected claims 1, 2, 4, 6-8, 10, and 11 under 35 U.S.C. § 112, first paragraph; rejected claims 1, 6, and 7 under 35 U.S.C. § 102(b) as being anticipated by Katsumi et al. (Japanese Patent Application Publication No. 11074472) ("Katsumi") with "Charles Evans and Associates" ("Evans") as evidence of inherency; rejected claims 2 and 10 under 35 U.S.C. § 103(a) as being unpatentable over Katsumi with Evans and in view of Wolf, "Silicon Processing for the VLSI Era, Volume 2: Process Integration," 1990, pp. 435 and 273-275 ("Wolf"); rejected claims 4 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Katsumi with Evans and in view of Vossen et al., "Thin Film Processes II," 1991, pp. 178, 197, and 201 ("Vossen"); and objected to claims 11 and 12¹ as being dependent upon a rejected base claim, but allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants traverse the rejections for the following reasons.²

Applicants propose to amend the drawings to add the legend "Prior Art" to Figs. 14 and 15 and to correct a typographical error in claim 15, to amend claims 1 and 7, and to cancel claims 6 and 11. Upon entry of this Amendment, claims 1, 2, 4, 7, 8, 10, and 13-26 will remain pending, with claims 13-26 withdrawn from consideration as drawn to a nonelected invention, and claims 1, 2, 4, 7, 8, and 10 under current examination.

¹ Although the Examiner has objected to claim 12, Applicants respectfully point out that claim 12 was canceled in the Amendment filed August 17, 2005.

² The Office Action may contain statements characterizing the related art, case law, and claims. Regardless of whether any such statements are specifically identified herein, Applicants decline to automatically subscribe to any statements in the Office Action.

The Examiner pointed out a typographical error in the Amendment filed August 17, 2005. Applicants acknowledge and apologize for the inadvertent error in the paragraph entitled "Amendments To The Claims" on page 2 of the August 17, 2005 Amendment. Nevertheless, the "Listing of Claims" at page 2-6 of the August 17 Amendment and the discussion of pending claims in the first paragraph of the Remarks section on page 7 of that Amendment are both accurate and consistent with the scope of the Examiner's examination.

Applicants propose to amend Figs. 14 and 15 to include the legend "Prior Art," and to amend Fig. 15 to correct the spelling of "Shift." Accordingly, Applicants file herewith one (1) drawings sheet, labeled "Replacement Sheet," containing amended Figs. 14 and 15. Applicants respectfully request that this replacement sheet be approved by the Examiner and made of official record. If the drawing are not in full compliance with the pertinent statutes and regulations, please advise the undersigned.

The Examiner rejected claims 1, 2, 4, 6-8, 10, and 11 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Applicants disagree with the Examiner's allegation that claims 1, 2, 4, 6-8, 10, and 11 fail to comply with the enablement requirement. The Examiner alleged that claims 1, 2, 4, 6-8, 10, and 11 "contain[] subject matter which was not described in the specification in such a way as to enable one skilled in the art . . . to make and/or use the invention" (Final Office Action, page 2).

The test for enablement is whether the disclosure contains sufficient information to enable one reasonably skilled in the pertinent art to make and use the claimed invention without "undue experimentation." M.P.E.P. § 2164.01. It is clear that "[d]etailed procedures for making and using the invention may not be necessary if the description of the invention itself is sufficient to permit those skilled in the art to make and use the invention." M.P.E.P. § 2164. The issue in

this case is whether a skilled artisan, given the teachings of the specification and what is known in the prior art, could make and use the invention without undue experimentation.

Applicants submit that the Examiner failed to meet his initial burden in rejecting the claims. As the M.P.E.P. makes clear, “[i]n order to make [an enablement] rejection, the examiner has the initial burden to establish a reasonable basis to question the enablement provided for the claimed invention.” M.P.E.P. § 2164.04 (internal citations omitted). The Examiner’s conclusions regarding enablement should be based on specific findings of fact that are supported by evidence. Id. As M.P.E.P. § 2164.04 states, “the minimal requirement is for the examiner to give reasons for the uncertainty of the enablement.” M.P.E.P. § 2164.04 (internal citations omitted).

The Examiner alleged that

[c]laim 1 (and thus all dependent claims) limit the first insulating film to containing no hydrogen. How this is achieved is not taught in the instant specification. The applicant points to page 6 for support, and although the specification on page 6 recites “no hydrogen”, the specification teaches that one can test for hydrogen using HFS (hydrogen Forward Scattering). HFS (Charles Evans and Associates) has detection limits for hydrogen at 0.1 atomic percent. Therefore, a silicon oxide layer may have 0.1 % hydrogen and not be detectable by this method. Therefore, the instant application does not teach “no hydrogen” but rather a hydrogen level undetectable by a test with detection limits of 0.1%. Final Office Action, pp. 2-3.

These allegations are not sufficient “reasons for the uncertainty of the enablement.” The Examiner could not have arrived at this conclusion after a full examination of the teachings of Applicants’ specification. The Examiner focused on the detection limits of HFS, but ignored Applicants’ teaching, on the same page of the specification, that “[a]n insulating film formed under a condition that hydrogen in the plasma is 1% or less in all gas components was examined

by SIMS analysis to reveal that the film did not contain any hydrogen” (page 6, lines 19-22).

HFS is subsequently mentioned, on page 6, as an alternative way to examine the insulating film.

Furthermore, the Examiner also ignored Applicants’ teaching that, “[a]ccording to the first embodiment, an element is formed in a step such as LP-CVD (Low Pressure-Chemical Vapor Deposition) or SOG (Spin On Glass) in which the element is not exposed to a hydrogen-containing plasma” (page 6, line 26 - page 7, line 2). Similar teachings appear throughout Applicants’ other embodiments. For example, “[i]n the second embodiment, an insulating film is formed using spin coating (coating film formation) using no plasma” (page 7, lines 19-22), such that “[a]ccording to the second embodiment, the SOG film 20 is formed without exposing the element to the H₂ plasma” (page 8, lines 5-7). Likewise, “[a]ccording to the third embodiment, the sputtered SiO₂ film 30 or thermal CVD film 31 is formed without exposing the element to the H₂ plasma” (page 9, lines 14-16).

In addition to the above-quoted citations to the specification, enablement does not turn on whether the original disclosure “clearly illustrates” certain subject matter. Instead, the issue is whether a skilled artisan, given the teachings of the specification and what is known in the prior art, could make and use the invention without undue experimentation.

Thus, the detectability limits of hydrogen percentage does not mean that the as-formed insulating film will necessarily contain hydrogen, especially if the film is formed without any direct exposure to a hydrogen-containing plasma. Applicants’ claim language calls for “forming a first insulating film on the wiring layer under a condition that hydrogen in a plasma is not more than 1% in all gas components, the first insulating film not containing hydrogen” (claim 1). The specification clearly enables one of ordinary skill in the art to make and use the claimed

invention without undue experimentation. As noted above, the specification clearly provides that “[a]n insulating film formed under a condition that hydrogen in the plasma is 1% or less in all gas components was examined by SIMS analysis to reveal that the film did not contain any hydrogen” (page 6, lines 19-22). Even under these conditions, several embodiments, quoted above, disclose that the insulating film is formed without exposure to a hydrogen-containing plasma.

The Examiner improperly formulates the inquiry by alleging that “the instant application does not teach ‘no hydrogen’ but rather a hydrogen level undetectable by a test with detection limits of 0.1%.” Final Office Action, page 3. Rather, the inquiry is whether Applicants’ specification clearly teaches “*the first insulating film not containing hydrogen*,” where the first insulating film is formed “*under a condition that hydrogen in a plasma is not more than 1% of all gas components*” (claim 1, emphasis added). As discussed previously, Applicants’ specification provides several embodiments teaching the formation of an insulating film that does not contain hydrogen. In addition, page 6 of the specification provides two techniques, SIMS and HFS, for measuring hydrogen. The Examiner did not acknowledge the teaching of SIMS, and focused on HFS while ignoring the specifically disclosed testing conditions, e.g., “as long as the analysis area is about 1 cm² at a film thickness of about 1,000Å to 2,000Å” (page 6, lines 24-25).

For at least the foregoing reasons, the Examiner has not satisfied the initial burden to establish a reasonable basis to question enablement given the knowledge of skill in the art combined with the teachings and examples provided in the specification. Specifically, a full examination of Applicants’ specification demonstrates that the Examiner cannot establish, *prima facie*, that a skilled artisan could not make and use the invention without undue experimentation.

Therefore, Applicants request that the Examiner withdraw the enablement rejection of claims 1, 2, 4, 7, 8 and 10 (claims 6 and 11 being canceled) under 35 U.S.C. § 112, first paragraph.

Applicants traverse the Examiner's rejections under 35 U.S.C. §§ 102(b) and 103(a). However, to advance prosecution, Applicants propose to amend claim 1 to include the allowable subject matter of claim 11, and to cancel claim 11. As a result, since claim 1 is the only independent claim under examination, all of claims 1, 2, 4, 7, 8, and 10 will be allowable over the prior art applied by the Examiner.

Applicants respectfully request that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing claims 1, 2, 4, 7, 8, and 10 in condition for allowance. Applicants submit that the proposed claim amendments do not raise new issues or necessitate the undertaking of any additional search of the art by the Examiner, since all of the elements and their relationships claimed were earlier claimed. Therefore, this Amendment should allow for immediate action by the Examiner.

Further, Applicants submit that the entry of the amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.

In view of the foregoing, Applicants request reconsideration of the application and withdrawal of the rejections. Pending claims 1, 2, 4, 7, 8, and 10 are in condition for allowance, and Applicants request a favorable action.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: January 27, 2006

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AMENDMENTS TO THE DRAWINGS

The attached replacement sheet of drawings includes changes to Figs. 14 and 15 and replaces the original sheet containing Figs. 9-15. In the replacement sheet, Figs. 14 and 15 have been labeled "Prior Art", and Fig. 15 has been amended to correct a typographical error.

Attachment: One (1) Replacement Sheet containing Figs. 9-15.